

## AMENDMENTS

### In the Claims:

Please amend the claims according to the following listing of claims and substitute it for all prior versions and listings of claims in the application.

Claims 1-15 (cancelled)

16. (previously presented) A method of fabricating a photodiode, comprising the steps of:

providing a substrate;

forming a well region of a first conductive type in the substrate;

forming an isolation structure in the well region of the substrate to define a photosensitive area on the substrate;

forming a plurality of trenches in the well region of the substrate within the photosensitive area;

forming a buffer layer of a semiconductor material over the well region of the substrate, wherein the buffer layer covers the interior walls of the trenches and the surface of the well region of the substrate within the photosensitive area;

forming a doped layer of a second conductive type directly over the buffer layer;

and

performing an annealing operation to drive dopants within the doped layer into the buffer layer and form a junction of the second conductive type and the first conductive type within the buffer layer.

17. (original) The method of claim 16, wherein the step of forming the doped layer comprises performing a chemical vapor deposition process.
18. (previously presented) The method of claim 16, wherein a material constituting the doped layer is selected from the group consisting of doped polysilicon and doped epitaxial silicon.
19. (original) The method of claim 16, wherein the step of forming the buffer layer further comprises performing a chemical vapor deposition process.
20. (previously presented) The method of claim 16, wherein a material constituting the buffer layer is selected from the group consisting of polysilicon and epitaxial silicon.
21. (new) The method of claim 16, wherein the first conductive type is P-type and the second conductive type is N- type.
22. (new) The method of claim 16, wherein the first conductive type is N-type and the second conductive type is P-type.
23. (new) The method of claim 16, wherein the doped layer completely fills the trenches.